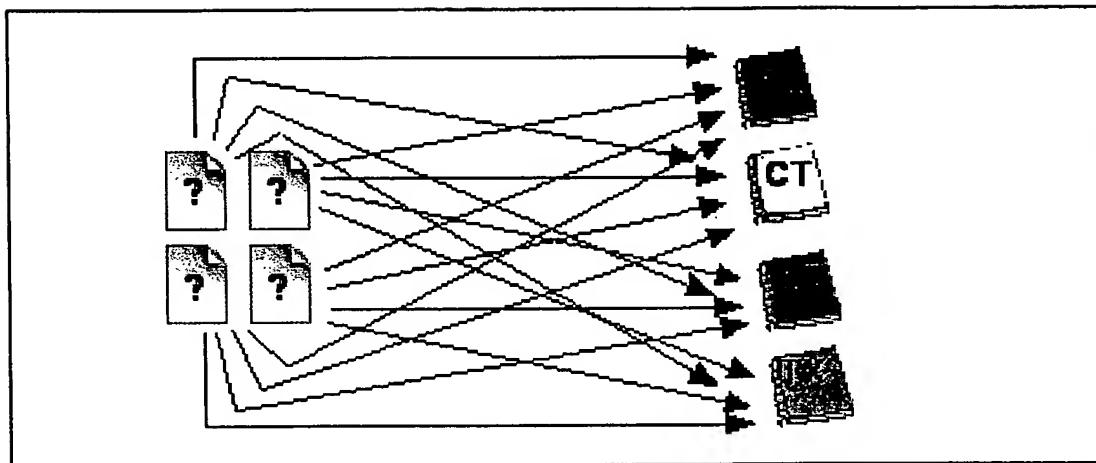
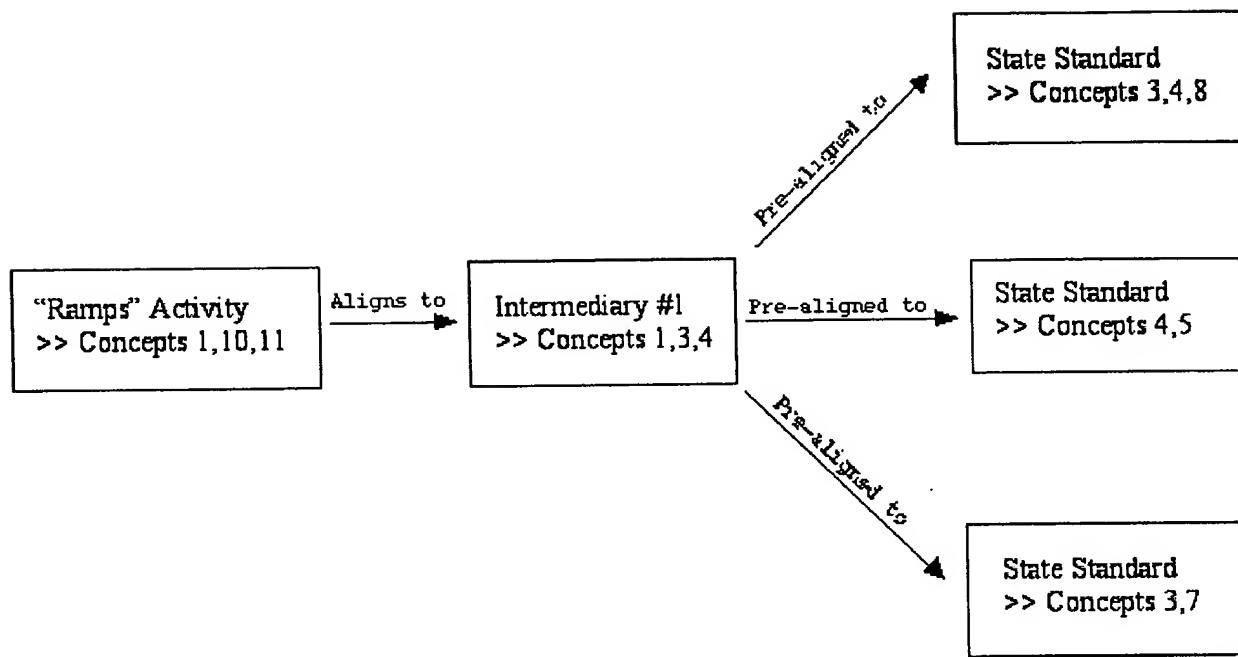


Fig. 1



Prior Art

Fig. 2



Prior Art

Fig. 3

Courses, Units, Activities

Search

Curriculum: Red Oak High School

Subject: Mathematics Grade: 9-10

Category: Data Analysis, Statistics, and Probability Type: District Objectives

Topic: Concepts & Skills

SEARCH

Search for: in All Subjects, All Units

SEARCH

- 1. Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and bar plot) for a set of data.
- 2. Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data. Use these notions to compare different sets of data.
- 3. Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data.
- 4. Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate.

Fig. 4

View Edit Link Reports Planner

Summary This mathematics objective requires collaborative teaching between the math and science departments.

Activities:

① Science & Technology
② Teacher Authored
③ Ecology and Energy
④ Competition - Natural Selection
⑤ Ball Bouncing Lab

Mathematics
Teacher Authored
⑥ Demographic Profiling
⑦ Validate Your Conclusions
⑧ Statistical Puzzles

Mathematics
Teacher Authored
⑨ Grade 10 Math Midterm 2001, Question #5
⑩ Grade 10 Math Midterm 2002 Question #11

Mathematics
ABC Publishing Company
⑪ Mean or Median??
⑫ Graphing and Statistics Challenge

Mathematics
State Dept. of Education
⑬ 2001 Grade 10 Math State Test Question #19
⑭ 2001 Grade 10 Math State Test Question #23

Gr. 9-10
Core Curriculum Activity Descriptions

Gr. 9-10
Core Curriculum Activity Descriptions

Gr. 9-10
Core Assessment Task Bank

Gr. 9-10
Core Curriculum Activity Descriptions

Gr. 9-10
Core Assessment Task Bank

Standards:

MA.10.9 Math
Mathematics
Data Analysis, Statistics, and Probability
All Standards

⑮ 10.D.1 Know the definitions of the mean, median, and mode of distribution of real valued data, and can compute them in particular situations.
⑯ 10.D.1 Organize and describe distributions of data using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem and leaf displays, scatter plots, and box and whisker plots.

Fig. 5

Graphing and Statistics Challenger

[Activity](#) [Edit](#) [Link](#) [Records](#) [Printer](#)

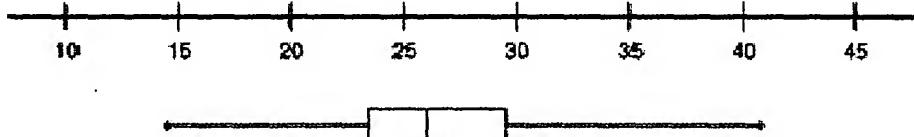
Area Understandings In order for students to master statistics and apply graphing skills well, students need to be asked to apply these skills in many different contexts. Thus we strongly encourage that you use ABC. This activity predominantly uses oral and visual learning styles.

Learning Styles

Extensions If student easily completes this activity, assign our "Advanced Graphing and Statistics Challenger" activity.

Launch Program [Click here to begin activity.](#)

Sample Question The box and whisker graph shown below represents the results of a survey of the estimated gas mileage of 100 car models.



Which statistics – mean, median, mode, range – can be determined from this graph?

A. mean only
B. median only
C. range and mean
D. range and median

✓ D. range and median

Next scheduled date:

Curriculum/Unit containing this activity/resource:

Red Oak High School
Mathematics
Grade 10 Mathematics 201
Probability and Statistics

Gr. 9-10

Objectives for this activity/resource:

Red Oak High School
Mathematics
Data Analysis, Statistics, and Probability
Concepts & Skills

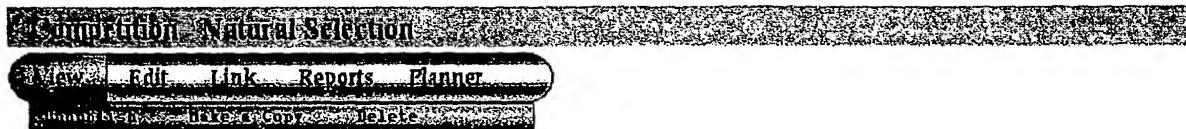
Gr. 9-10

District Objectives

① Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plot, circle graph, line graph, and line plot) for a set of data.

② Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data. Use these notions to compare different sets of data.

Fig. 6



Summary	Students conduct a month-long research project whereby they analyze data on a mouse population over 15 years. They submit a written report in which they propose and defend at least one theory pertaining to the mouse population data.
Materials	graph paper, ruler, and student handout material.
Duration	1 period per week for four weeks.
References	Biology -Lab Projects. Investigation 30-1, pg. 117, "Lab Worksheets" manual.

Next scheduled date:

Courses/Units containing this activity/resource:

Red Oak High School	
Science & Technology	Gr. 9-10
<u>CPI Biology Course Guide</u>	
⑧ <u>Evolution CPI</u>	
Red Oak High School	
Science & Technology	Gr. 9-10
<u>Honors Biology Course Guide</u>	
⑧ <u>Evolution (Honors)</u>	

Objectives for this activity/resource:

Red Oak High School	
Mathematics	Gr. 9-10
Data Analysis, Statistics, and Probability	District Objectives
Concepts & Skills	
⑧ <u>2. Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data. Use these notions to compare different sets of data.</u>	
Red Oak High School	
English Language Arts	Gr. 9-10
Composition Strand	District Objectives
Writing	
⑧ <u>3. For informational/expository writing: Write well-organized research papers that prove a statement (e.g., theory, hypothesis) using logical organization, effective supporting evidence, and variety in sentence structure.</u>	
Red Oak High School	
Science & Technology	Gr. 9-10
Life Science (Biology)	District Objectives
6. Ecology	
⑧ <u>4. Identify the factors in an ecosystem that influence fluctuations in population size.</u>	
⑧ <u>5. Analyze changes in population size resulting from changes in climate, predator-prey interactions, food availability, or human activity.</u>	

Fig. 7



Summary	Students are given a table of scientific data and asked to graph, using graph paper and/or computer spread sheet programs. Students use relevant math skills to create multiple graphs that effectively present and analyze the data given them. Using their graphs, students write their predictions and conclusions.
Materials	Data tables
Duration	1-2 periods
Broad Understandings	Students understand how to apply appropriate statistics skills to analysis of scientific data.
Additional Resources	'Math/Science Tasks' pp. 13-20

Next scheduled date:

Objectives for this activity/resource:

Red Oak High School

Mathematics

Gr 9-10

Data Analysis, Statistics, and Probability

District Objectives

Concepts & Skills

- ① 1. Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data.
- ② 2. Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data.
Use these notions to compare different sets of data.

Fig. 8

Edit Link Remarks Planner

Summary This mathematics objective requires collaborative teaching between the math and science departments

Activities:

Science & Technology	Gr: 9-10
Teacher-Authored	Core Curriculum Activity Descriptions
④ Electricity and Energy	
④ Competition - Natural Selection	
④ <u>Ball Bouncing Lab</u>	
Mathematics	Gr: 9-10
Teacher-Authored	Core Curriculum Activity Descriptions
④ Analyzing data	
④ Demographic Profiling	
④ Validate Your Conclusion	
④ Statistical Processes	
Mathematics	Gr: 9-10
Teacher-Authored	Core Assessment Task Book
④ Grade 10 Math Midterm 2001, Question #5	
④ Grade 10 Math Midterm 2002, Question #12	
Mathematics	Gr: 9-10
ABC Publishing Company	Core Curriculum Activity Descriptions
④ Mean or Median??	
④ Graphing and Statistics Challenger	
Mathematics	Gr: 9-10
State Dept. of Education	Core Assessment Task Book
④ 2001 Grade 10 Math State Test Question #10	
④ 2001 Grade 10 Math State Test Question #11	

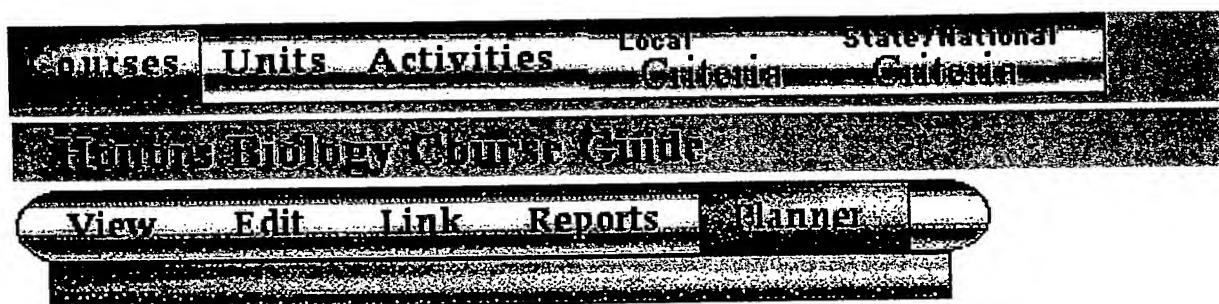
Standards:

MA.1000 Math	
Mathematics	Gr: 9-10
Data Analysis, Statistics, and Probability	
10 Standards	
④ 10.D.2 Know the definitions of the mean, median, and mode of distribution of real valued lists, and can compute them in particular situations.	
④ 10.D.1 Organize and describe distributions of data using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem and leaf displays, scatter plots, and box and whisker plots.	

Fig. 9

Dyson Cryer		
Improve Students' Understanding of Genetics in the 9th and 10th grades	<p>1). By February, 90% of students in Grade 10 Honors Biology will obtain an average score of 8 or better on assessed classroom activities for the Heredity unit.</p> <p>Target: Last year, 80% of students obtained an average score of 8 or better.</p>	<p>B  Build a Baby</p> <p>Summary: Students, working in pairs, "build a baby" from the combination of genes for specific traits. One gene (represented by one side of a coin) is contributed by each "parent". The concept of dominance/recessiveness as well as codominance is introduced. The concept that each parent contributes a minimum of one gene to his/her offspring is reinforced.</p> <p>References: "So You're Going to have A Baby" (see Bemon or West for copies of this investigation)</p> <p>Materials: pennies, packet of instru...</p>
		<p>B  3.5 Differentiate between dominant, recessive, codominant, polygenic, and sex-linked traits.</p>
		<p>D  3.6 State Mendel's laws of segregation and independent assortment.</p>
		<p>B  3.7 (2 Yr. Science Sequence) Use a Punnett Square to determine the genotype and phenotype of monohybrid crosses.*</p>

Fig. 10



« « April 2002 » »					
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	1 • Basic Biochemistry Part 2 - Filmstrip	2 • Designer Snacks	3 • DNA Structure and Function	4 • DNA Structure and Function	5 • DNA extraction
7	8 • Introduction to Protein Synthesis	9 • Protein Synthesis Drama	10 • Race for the Double Helix	11 • Student DNA model	12 • Enzymes

Fig. 11

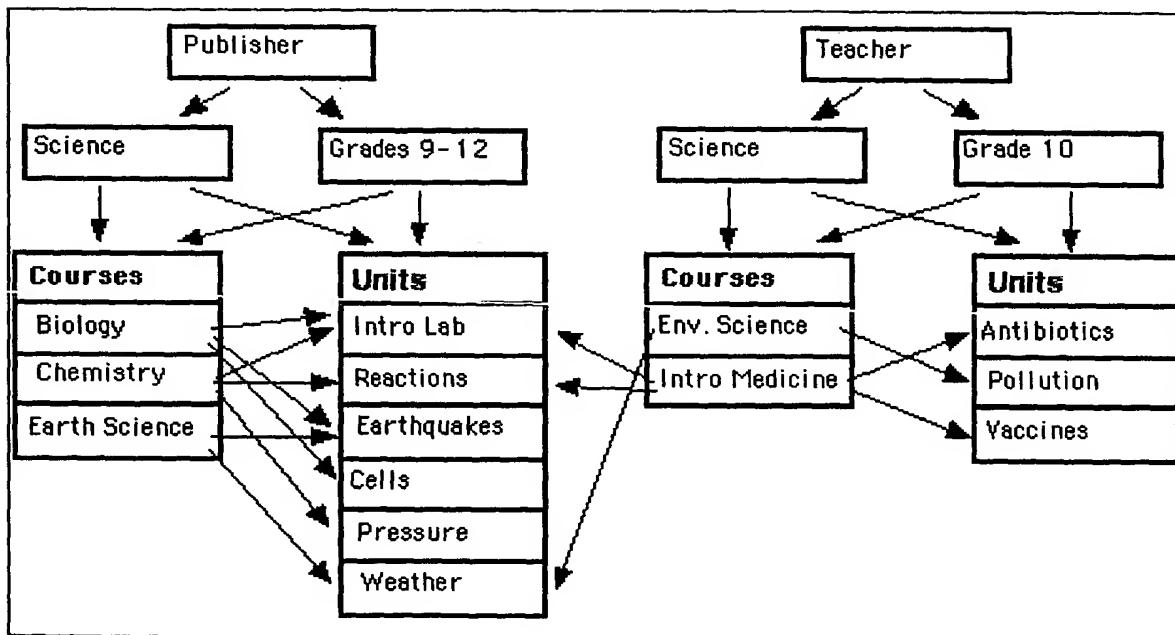
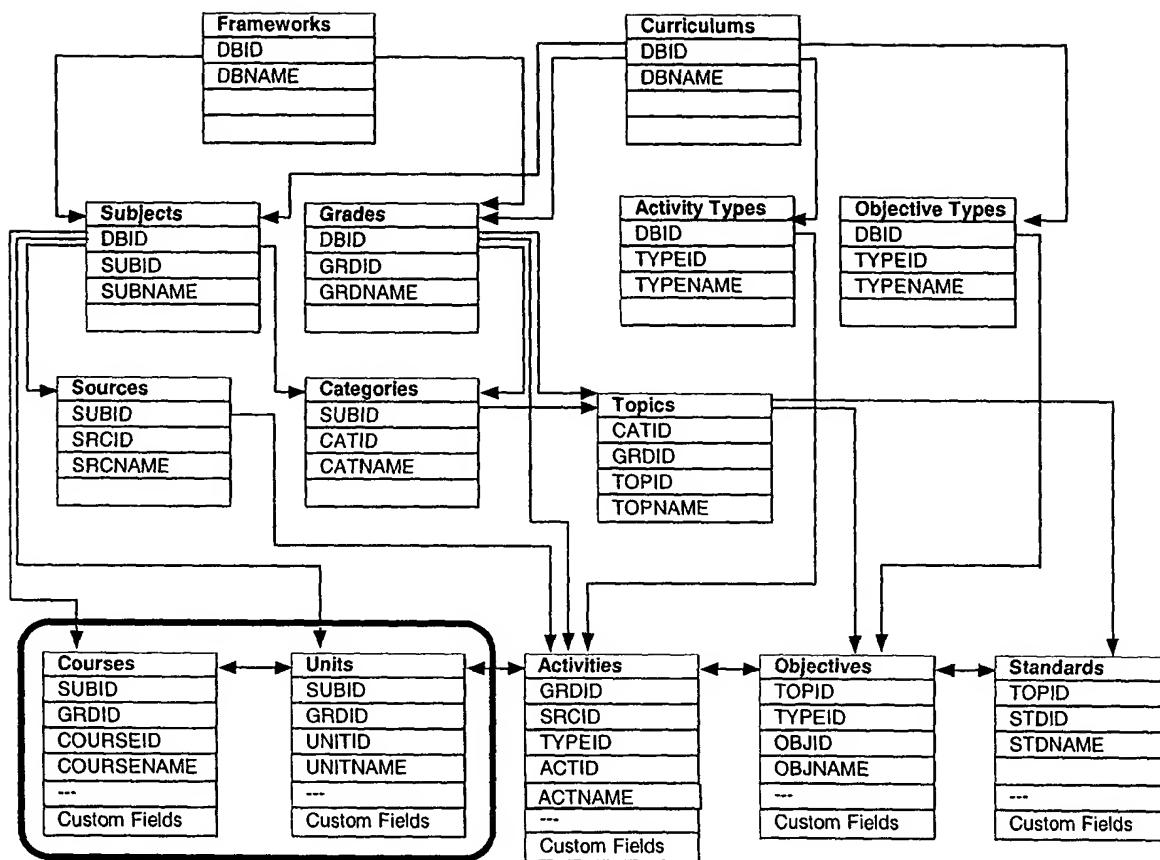


Fig. 12

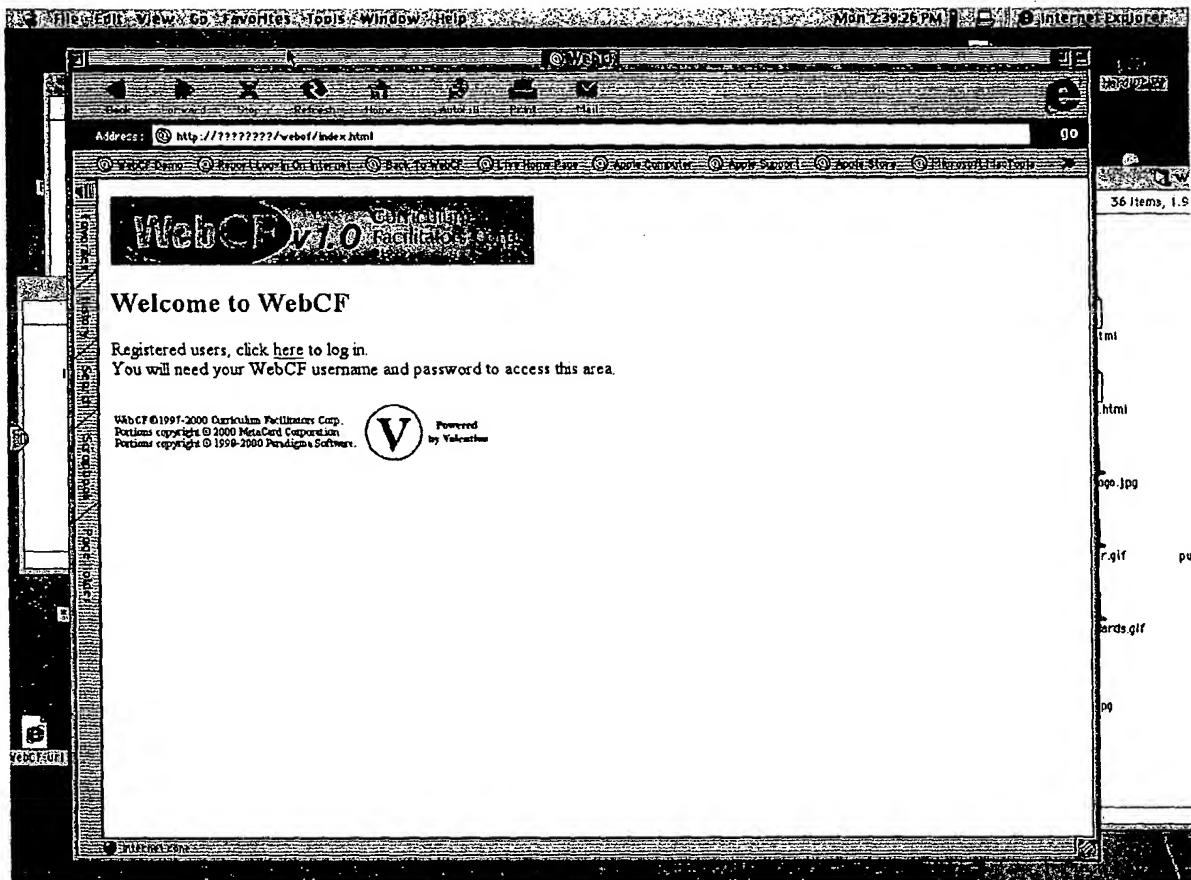


Fig. 13

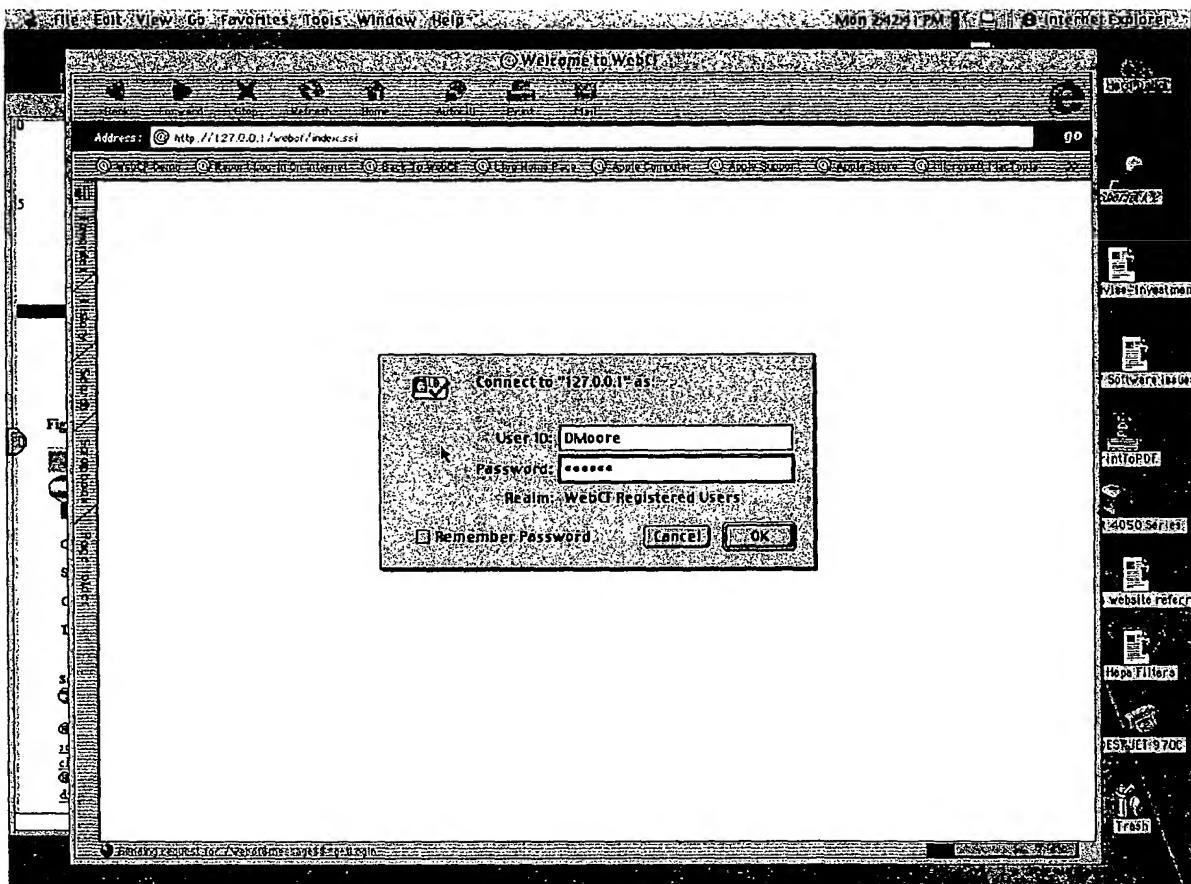


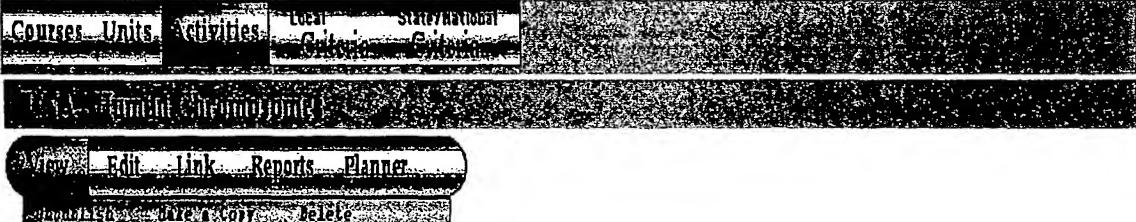
Fig. 14

Courses	Units	Activities	Local	State/National
Curriculum	Criteria	Criteria	Criteria	Criteria
Curriculum: <input type="button" value="Barnstable High School"/>				
Subject: <input type="button" value="Science & Technology"/>	<input type="button" value="Grade: 9-10"/>			
<input type="button" value="New Record"/>				
Search for: <input type="text"/>	in	<input type="button" value="All Subjects"/>	,	<input type="button" value="All Grades"/>
<input type="button" value="Search Courses"/>				
 <u>CP1 Biology Course Guide</u>				
 <u>CP2 Biology Course Guide</u>				
 <u>Honors Biology Course Guide</u>				
 <u>Physical Science Concepts CP1& CP2 Guide</u>				
 <u>Physical Science Honors Course Guide</u>				

Fig. 15

Courses	Units	Activities	Local Criteria	State/National Criteria
21 activities found. Displaying 1 through 10				
Search for: <input type="text" value="DNA"/>	in <input type="text" value="Science & Technology"/>	<input type="button" value="9-10"/>		
<input type="button" value="Search ACTIVITIES"/>				
Jump to page: [prev] [next] 1 <u>2</u> 3				
Barnstable High School				
Science & Technology		9-10		
Teacher-Authored		Core Curriculum Activity Descriptions		
1 DNA - Human Chromosomes				
<i>Summary:</i> In class discussion, students will be able to explain the relationship between DNA, genes and chromosome. Students will define and explain the significance of the diploid number for all living things and compare that to the haploid				
2 DNA Fingerprinting in Forensic Science				
<i>Summary:</i> Students are given a simulated electrophoresis gel of the DNA of 9 suspects in a murder investigation. This gel or "Suspect DNA Analysis Card" is used to match the evidence found				
3 DNA Structure				
<i>Summary:</i> Students count out nucleotides and determine that A pairs with T and G with C as the students are introduced to DNA structure. <i>Materials:</i> scissors, paper, tape <i>4 crayon colors:</i> red, blue, green, yellow; <i>Duration:</i> 1				

Fig. 16



Courses Units Activities Local State/National

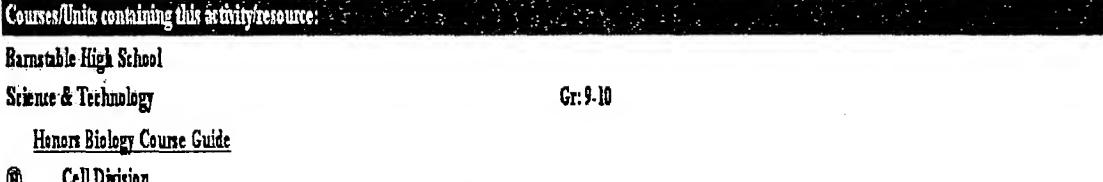
Chromosomal Nondisjunction

Edit Link Reports Planner

Delete

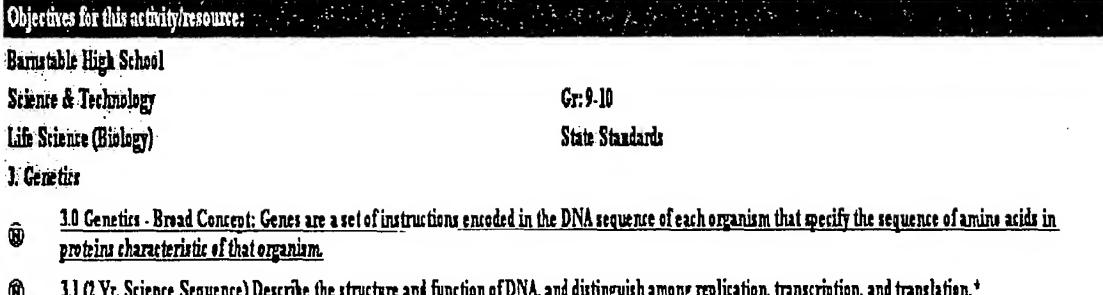
Summary	In class discussion, students will be able to explain the relationship between DNA, genes and chromosome. Students will define and explain the significance of the diploid number for all living things and compare that to the haploid number (using the human 46/23 as an example). Discuss and give examples of chromosomal nondisjunction disorders.
References	Susan Offner, 1992. "American Biology Teacher", "Problem Solving/Critical Thinking: Chromosomal Nondisjunction Disorders"
Materials	Handout of chromosome map, worksheet on nondisjunction disorders, overhead/board, diagrams.
Duration	1 period

Next scheduled date:



Courses/Units containing this activity/resource:

Barnstable High School
Science & Technology
Honors Biology Course Guide
⑧ Cell Division



Objectives for this activity/resource:

Barnstable High School
Science & Technology
Life Science (Biology)
3. Genetics

⑧ 1.0 Genetics - Broad Concept: Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism.

⑧ 3.1 (7 Yr. Science Sequence) Describe the structure and function of DNA, and distinguish among replication, transcription, and translation.*

Fig. 17

DNA Learning Center

View Edit Link Reports Planner

Curriculum: Barnstable High School ▾

Subject: Science & Technology ▾

Grade: 9-10 ▾

Category: Life Science (Biology) ▾

Type: State Standards ▾

Topic: 3. Genetics ▾

Search for: in All Subjects ▾, All Grades ▾

Search Objectives

⑩ 3.0 Genetics - Broad Concept: Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism.

⑩ 3.1 (2 Yr. Science Sequence) Describe the structure and function of DNA, and distinguish among replication, transcription, and translation.*

3.2 Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology.

3.3 Describe the general pathway by which ribosomes synthesize proteins by using tRNAs to translate genetic information encoded in mRNAs.

Fig. 18

New Baseline Curriculum (Source Data)	Existing Baseline Curriculum (Central Data)	State / National Standards (Target Data)
Berkeley South Elementary Science Grades K -2 Inquiry Graphing Skill Objectives 2.2 Compare data on simple graphs.	Berkeley South Elementary Mathematics Grades K -2 Number Sense & Operations Objectives Master 1.1 Compare sets of objects and describe a quantitative relationship (e.g. less than, more).	California Mathematics Grade 1 Content Standards (K-7) Statistics, Data Analysis, and Probability 1.0 Students organize, represent, and compare data by category on simple graphs and charts: 1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts and picture graphs.

Fig. 19

Framework: Sunshine State Standards Grade Level Expectations

Florida Department of Education 1

Subject: Mathematics

Grade: K-2

Category: Number Sense

Topic: Concepts, and Operations

Level 1. Standard 1: *The student understands the different ways numbers are represented and used in the real world.*

Level 2: Benchmarks by Grade Cluster

Benchmark 1.1: The student associates verbal names, written word names, and standard numerals with the whole numbers less than 1000.

Level 3: Grade- Specific Expectations

1.1.1. In Kindergarten, student counts up to 10 or more objects using verbal names and one-to-one correspondence....

1.1.2 In First Grade, student compares and orders whole numbers to 100 or more using concrete materials, drawings, number lines, and symbols (<, =, >)....

1.1.3 In Second Grade, student represents real-world applications of whole numbers, to 1000 or more, using concrete materials, drawings, and symbols.